



Missouri Department of Natural Resources

Water Pollution Control Program

STATE OF MISSOURI AQUATIC RESOURCES MITIGATION GUIDELINES

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OBJECTIVE: The goal of the federal Clean Water Act is to restore and maintain the chemical, physical and biological integrity of the Nation's waters including wetlands. These guidelines will help determine the minimum acceptable levels of mitigation in regards to permits issued under Sections 404 and 401 of the federal Clean Water Act for the State of Missouri.

These guidelines were developed by the Missouri Department of Natural Resources (MDNR) with cooperation from the Missouri Department of Conservation (MDC), the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (EPA), the U.S. Army Corps of Engineers (COE), the Natural Resources Conservation Service (NRCS) and the Missouri Department of Transportation (MoDOT).

AUTHORITY: These guidelines are intended to comply with the following authorities:

1. Clean Water Act (33 USC 1251 et seq.)
2. National Environmental Policy Act (42 USC 4321 et seq.)
3. Executive Order 11990
4. Missouri Clean Water Law, Chapter 644, RSMO and implementing regulations
10 CSR 20-7.031, Water Quality Standards

The guidelines are consistent with the regulations and policies, including the Water Quality Standards, of the Department of Natural Resources and the Missouri Clean Water Commission as well as other policies or rules of the Department of Natural Resources and the cooperating agencies.

- A. Mitigation is defined to include: avoiding impacts, minimizing impacts, rectifying impacts, reducing impacts over time and compensating for impacts. This definition can be simplified into three general types: avoidance, minimization and compensatory mitigation. These guidelines will address these three general types of mitigation.
 1. Avoidance: No impacts to aquatic resources should occur if there is a practicable alternative to the proposed impacts which would have less adverse impacts to the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences. If the impacts to the resource are so significant, the project should not be permitted even if no alternatives are available.
 2. Minimization: Appropriate and practicable steps to minimize adverse impacts will be required through project modifications and permit conditions.
 3. Compensatory Mitigation: Appropriate and practicable compensatory mitigation will be required for unavoidable adverse impacts to aquatic resources which remain after avoidance and minimization have been done to the extent practicable. The COE, or other agency with authority to delineate wetlands using the appropriate delineation manual, will determine the jurisdictional boundaries of wetlands or other waters at the project site.
- B. Compensatory mitigation sites shall be recorded as deed restrictions in perpetuity, or some other method as approved by the COE and the MDNR, that will reserve the mitigation area in perpetuity or aquatic resource protection and wildlife purposes.

- C. Projects in aquatic areas with federal or state endangered, rare or threatened species must consult with the USFWS and/or MDC for information to avoid/minimize any adverse impacts to these species.

GENERAL CRITERIA

- A. Definitions: The following definitions describe the various terms relating to wetland mitigation to be used by MDNR for purposes of these guidelines:
1. *Aquatic Resources*: All aquatic areas which fall under the jurisdiction of Section 404 of the Clean Water Act.
 2. *Created Wetland*: The conversion of a persistent non-wetland area into a wetland. Creation techniques vary but usually entail excavation or the construction of berms, levees and water control structures which establish wetland hydrology. Once the hydrology has been introduced, wetland plants may grow naturally, or it may be necessary to transplant desired vegetation from other established wetlands. Even when wetland vegetation is established, it will take an indeterminate amount of time for hydric soils to develop. Thus, created wetlands, also called artificial wetlands, may not meet the criteria for a true wetland for years after its creation.
 3. *Degraded Wetland*: A wetland altered through impairment of some physical or chemical property which results in a reduction of habitat value or other reduction of functions.
 4. *Enhanced Wetland*: An existing wetland where some activity of people increases one or more values; often with an accompanying decline in other wetland values.
 5. *Preservation*: The protection of ecologically important wetlands or other aquatic resources in perpetuity through the implementation of appropriate legal and physical mechanisms. Preservation may include protection of upland areas adjacent to wetlands as necessary to ensure protection and/or enhancement of the aquatic ecosystem.
 6. *Restoration*: Wetland restoration is the act of returning an area that was previously a wetland, or is presently a degraded wetland, back to a condition of equal or greater acreage and/or function within the same wetland classification type. In many cases, reestablishing the hydrology is sufficient to reactivate the seedbed that lies dormant in the wetland soil. For example, restoration of a drained wetland may be as simple as removing the drainage tiles or plugging up the drainage ditch that removed the water from the area.
 7. *Shrub*: A woody plant which at maturity is usually less than six meters (20 feet) tall.
 8. *Tree*: A woody plant which at maturity is usually six meters (20 feet) or more in height.
 9. *Watershed*: Watershed or basin areas, for these guidelines, will use the cataloging unit boundaries (eight digit number) as developed by the U.S. Geological Survey (USGS) and shown on the enclosed maps.
 10. *Wetland*: Areas which are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas.

B. Mitigation Site

1. Compensatory mitigation shall occur on-site unless:
 - a. On-site mitigation is impractical
 - b. On-site mitigation will not adequately replace lost functions
 - c. It is determined that off-site mitigation is environmentally preferable considering the type of aquatic resource impacted and the historic loss of aquatic resource types and functions in the watershed.
2. Off-site mitigation shall be conducted: adjacent to or connected with other protected sites in the same watershed unless the applicant demonstrates the impracticality of doing so.
3. Compensatory mitigation shall be done in the same watershed where adverse impacts occurred, unless the impracticability of doing so is demonstrated.
4. Exceptions:
 - a. Mitigation for linear projects (i.e., along highway right-of-way or pipelines) with impacts in several watersheds may be done at a single mitigation site.
 - b. If mitigation in one site is not possible, mitigation for a single project may be conducted at more than one site and with more than one mitigation technique.

C. Mitigation Type:

1. Mitigation shall be in-kind unless the applicant demonstrates the impracticality of in-kind habitat mitigation or;
2. It is determined that out-of-kind habitat mitigation is environmentally preferable considering the type of aquatic resource impacted, and the historic loss of aquatic resources and the functions and values in the watershed.

D. Mitigation Method: Unavoidable losses to aquatic resources may be compensated for in several ways.

1. Restoration of historic wetlands (i.e., prior converted cropland). This is the preferred method for wetlands compensation.
2. Creation of wetlands in areas where wetlands did not historically exist.
3. Enhancement of existing wetlands. This method should not result in secondary impacts to wetlands or the aquatic system.
4. Preservation of existing wetlands. This method should only be used in unusual circumstances, determined on a case by case basis and will generally receive only partial credit. Therefore, more acreage would be required as compared to other methods of compensation.

5. Other.

- a. Mitigation for aquatic resources besides wetlands should be dealt with case by case since providing wetland acreage may not be appropriate for other aquatic resource impacts. Methods may include: restoring a degraded reach, designing a new reach as close to a natural one as possible or riparian plantings.
- b. Other methods of compensatory mitigation exist. These include banking and in lieu fee. These types of agreements shall be determined on a case by case basis. Applicants wanting to use one of these methods must still go through the avoidance and minimization process. On-site mitigation is preferred unless there is some extenuating circumstance in which off-site mitigation would better serve the resource that is damaged. Any mitigation banks that are used shall be developed by following the current federal guidance for mitigation banks. The first guidance was issued November 28, 1995. This guidance may be fine tuned at a later date to be specific to the State of Missouri.

E. Mitigation Ratios

1. Acreage ratios are useful to ensure consistency among projects and as a surrogate for more complex functional assessment methodologies when seeking to ensure the replacement of lost aquatic habitat including wetland functions. The ratios reflect the uncertainty of mitigation success, the time delay between the loss of functions and the reestablishment of those functions and the value of the aquatic resource from a water quality perspective.
2. The following ratios have been developed by the participating agencies for use in the State of Missouri for wetland creation/restoration. The ratios are intended for use by projects for which the sequencing requirements have been completed and it has been determined at that point that compensatory mitigation is appropriate. The ratios are not intended for enforcement purposes, however, the high end of the range may be an appropriate place to begin negotiations for enforcement cases.

Farmed Wetlands	1.0-1.5
Emergent	1.0-3.0
Shrub-Scrub Wetlands	1.5-3.0
Wooded Wetlands	2.0-4.0
Open Water	1.0
Streams	Case by Case (refer to General Criteria D.5.a. & b.)

These ratios may be increased when:

- a. Mitigation is not conducted before or concurrently with a development project.
 - b. Out-of-watershed mitigation is proposed.
 - c. Projects impact functioning mitigation sites.
 - d. Other relevant circumstances make increases in the ratio appropriate.
3. Rare and unique aquatic habitats may not be appropriate for any mitigation and therefore no impacts should occur in these areas. This would include fens, mature bottomland woodland or other areas as described by the current NRCS Missouri categorical exclusion and red flag areas.
- F. Wetland Classification (from Cowardin, Classification of Wetlands and Deepwater Habitats of the United States, FWS/OBS-79/31, December 79

1. "If vegetation (except pioneer species) covers 30% or more of the substrate, we distinguish classes on the basis of the life form of the plants that constitute the uppermost layer of vegetation and that possess an areal coverage 30% or greater. For example, an area with 50% areal coverage of trees over a shrub layer with a 60% areal coverage would be classified as Forested Wetland; an area with 20% areal coverage of trees over the same (60%) shrub layer would be classified as Shrub-Scrub Wetland. When trees or shrubs alone cover less than 30% of an area but in combination cover 30% or more, the wetland is assigned to the class Shrub-Scrub. When trees and shrubs cover less than 30% but the total cover of vegetation (except pioneer species) is 30% or greater, the wetland is assigned to the appropriate class for the predominant life form below the shrub layer."

G. Mitigation Plan

1. All mitigation plans must be submitted and approved before work begins on the project. The applicant must also demonstrate financial and technical capability to do the work and show that a suitable site is available.
2. When possible, mitigation should be completed before project proceeds or completed prior to or at the same time the project is completed. Failure to achieve this may result in increased mitigation ratios.
3. Mitigation plans should include the following information.
 - a. Clear statement of objectives;
 - b. Description of the wetland functions that will be lost and those that will be replaced;
 - c. Statement of the location and description of the baseline elevation and hydrology of the mitigation site;
 - d. Detailed construction plan with post-construction contour map, detailed location map and as built drawings;
 - e. Plans for establishment of vegetation including what, where and when if planting is proposed. Also, detailed drawings of planting plan and any proposed structures;
 - f. Description of a mitigation monitoring program;
 - g. Performance standards for site grading, hydrology and plant community establishment, composition and survival;
 - h. Contingency plan;
 - i. Guarantee that the work will be performed as planned; and
 - j. Provisions for long-term management and maintenance.